

## REMARKS/ARGUMENTS

---

***Brief Summary of Status (off final office action mailed on 09-24-2007 (Part of  
Paper No./Mail Date 20070831))***

Claims 62-115 are pending in the application.

Claims 62-115 are rejected.

***Drawing Objections***

1. In the final office action, the Examiner states:

“The drawings are objected to because Figures 3 and 4 are of not enough quality; it is suggested to send new figures 3 and 4 in the same quality that figures 1 and 2 (see below). Corrected drawing sheets in compliance with 37 CFR 1.121 (d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency.

Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.” (final office action, Part of Part of Paper No./Mail Date 20070831, p. 2).

***Claim Rejections - 35 U.S.C. § 112***

2. In the final office action, the Examiner states:

“Claims 62-115 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one

skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention

The specification doesn't disclose "a third symbol" following the second symbol, and where this third symbol is coming from, a first trellis encoder a second trellis encoder, after the interleaver or the de-interleaver." (final office action, Part of Part of Paper No./Mail Date 20070831, p. 3).

***Claim Rejections - 35 U.S.C. § 102***

3. In the final office action, the Examiner states:

"Claims 62-67, 72-77, 82-86, 91-94, 99-101, 106-108 and 113 are rejected under 35 U.S.C. 102(b) as being anticipated by Mottier ("Influence of tentative decisions provided by a Turbo-decoder on the carrier synchronization: Application to 64-QAM signals", COST 254 Workshop on Emerging Techniques for Communication Terminals, Toulouse France July 7-9, 1997, pages 326-330)." (final office action, Part of Part of Paper No./Mail Date 20070831, p. 11-12).

***Claim Rejections - 35 U.S.C. § 103***

4. In the final office action, the Examiner states:

"Claims 68, 70, 71, 78, 80, 81, 87, 89, 90, 95, 97, 98, 102, 104, 105, 109, 111, 112, 114 and 115 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mottier as applied to claims 62, 72 and 82 above, and further in view of Applicant Admitted Prior Art (AAPA)." (final office action, Part of Part of Paper No./Mail Date 20070831, p. 25).

---

***Drawing Objections***

1. In the final office action, the Examiner states:

“The drawings are objected to because Figures 3 and 4 are of not enough quality; it is suggested to send new figures 3 and 4 in the same quality that figures 1 and 2 (see below). Corrected drawing sheets in compliance with 37 CFR 1.121 (d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.” (final office action, Part of Part of Paper No./Mail Date 20070831, p. 2).

The Applicant is submitting herewith REPLACEMENT SHEETS for FIG. 3 and FIG. 4.

As such, the Applicant respectfully requests that the Examiner withdraw the objections to the drawings.

***Claim Rejections - 35 U.S.C. § 112***

2. In the final office action, the Examiner states:

“Claims 62-115 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention

The specification doesn't disclose "a third symbol" following the second symbol, and where this third symbol is coming from, a first trellis encoder a second trellis encoder, after the interleaver or the de-interleaver." (final office action, Part of Part of Paper No./Mail Date 20070831, p. 3).

The Applicant respectfully traverses.

The Applicant respectfully points out that one having skill in the art to which the invention pertains, when considering the originally filed specification (including figures and written description), would comprehend clearly that

Moreover, the Applicant respectfully believes that one having skill in the art to which the invention pertains, when considering subject matter included within the Applicant's originally filed specification (including figures and written description), would understand and comprehend that more than merely a first symbol and a second symbol may be employed within various embodiments.

For example, when considering FIG. 3 and its associated written description (some of which also referenced similar portions within FIG. 2), the operation of the "switch 209" in FIG. 3 is to select "between the output of the trellis encoder 203 and trellis encoder 207". The Applicant respectfully believes that one having skill in the art to which the invention pertains, when considering subject matter included within the Applicant's originally filed specification (including figures and written description), would understand and comprehend this "switch 209" does not merely operate one time only thereby generating a first symbol and a second symbol that may be employed within various embodiments.

The Applicant respectfully believes that one having skill in the art to which the invention pertains, when considering subject matter included within the Applicant's originally filed specification (including figures and written description), would understand and comprehend this "switch 209" can operates successively again in time (e.g., more than once) thereby generating a first and second symbol, followed by a third and fourth symbol, followed by a fifth and sixth symbol, and so on ... and generally followed by an  $n^{\text{th}}$  and  $(n+1)^{\text{th}}$  symbol.

The Applicant respectfully believes that one having skill in the art to which the invention pertains, when considering subject matter included within the Applicant's

originally filed specification (including figures and written description), would understand and comprehend such a signal generated thereby could be launched into a communication channel (e.g., channel 211) and subsequently received by a communication device at the other end of the communication channel.

This receiving communication device would then receive a signal that includes the multiple symbols within the signal.

As such, the signal received by such a communication device could include a first and second symbol, followed by a third and fourth symbol, followed by a fifth and sixth symbol, and so on ... and generally followed by an  $n^{\text{th}}$  and  $(n+1)^{\text{th}}$  symbol.

The Applicant respectfully believes that one having skill in the art to which the invention pertains, when considering subject matter included within the Applicant's originally filed specification (including figures and written description), would understand and comprehend that there can indeed be a third symbol following a second symbol. For example, the Applicant teaches and discloses:

“The outputs of trellis encoders 203 and 207 are then punctured by switch 209. In other words, switch 209 selects between the output of trellis encoder 203 and trellis encoder 207. The punctured output of turbo encoder 200 is then provided to a channel 211.” (Applicant’s specification, p. 4 lines 3-6)

The Applicant respectfully believes that one having skill in the art to which the invention pertains, when considering subject matter included within the Applicant's originally filed specification (including figures and written description), would understand and comprehend that the “switch 209” alternatively selects a first symbol that is output from the “trellis encoder 203”, then a second symbol that is output from the “trellis encoder 207”, then a third symbol that is output from the “trellis encoder 203”, then a fourth symbol that is output from the “trellis encoder 207”, and so on.

Generally speaking, the Applicant respectfully believes that one having skill in the art to which the invention pertains, when considering subject matter included within the Applicant's originally filed specification (including figures and written description), would understand and comprehend that a communication device could receive a signal and operate to recover a first symbol, a second symbol, and a third symbol from the signal.

With respect to a communication device receiving a signal having multiple signals, the Applicant respectfully believes that the Applicant teaches and discloses that there are embodiments (e.g., with respect to FIG. 3) where only every other symbol is employed in the receive/decoding processing.

For example, the Applicant teaches and discloses:

“The interleaver 205 accepts the data 201 and interleaves or shuffles the data before providing it to the trellis encoder 207. As a result, the data provided by the lower leg of the turbo encoder comprising the trellis encoder 207 is out of sequence and must be resequenced. For this reason, switch 303 is added to the Viterbi decoder 301 so that only the symbols from trellis encoder 203 or trellis encoder 207 are used by the phase detector 217 to adjust the controlled oscillator 223. The delay introduced by interleaver 205 makes it impractical for the Viterbi decoder 301 to use symbols from both sides of the turbo encoder 200 without a buffering and delay mechanism at the input of the Viterbi decoder. Switch 303 will select every other symbol. Either a symbol from trellis encoder 203 will be selected or a symbol from trellis encoder 207 will be selected by switch 303.” (Applicant’s specification, p. 4 line 34 to p. 5, line 8)

Cleary, the Applicant teaches and discloses that “Switch 303 will select every other symbol”. In other words, in a sequence that includes a first and second symbol, followed by a third and fourth symbol, followed by a fifth and sixth symbol, and so on ... and generally followed by an  $n^{\text{th}}$  and  $(n+1)^{\text{th}}$  symbol, then the “Switch 303 will select” the first symbol, the third symbol, the fifth symbol, and so on ... and then the  $n^{\text{th}}$  symbol.

Alternatively, the Applicant teaches and discloses that “Switch 303 will select every other symbol”. In other words, in a sequence that includes a first and second symbol, followed by a third and fourth symbol, followed by a fifth and sixth symbol, and so on ... and generally followed by an  $n^{\text{th}}$  and  $(n+1)^{\text{th}}$  symbol, then the “Switch 303 could alternatively select” the second symbol, the fourth symbol, the sixth symbol, and so on ... and then the  $(n+1)^{\text{th}}$  symbol.

Therefore, the Applicant respectfully believes that claims 62-115 are in compliance with 35 U.S.C. 112, first paragraph, and that they do comply with the written description requirement.

As such, the Applicant respectfully requests that the Examiner withdraw the rejections to claims 62-115 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

***Claim Rejections - 35 U.S.C. § 102***

3. In the final office action, the Examiner states:

“Claims 62-67, 72-77, 82-86, 91-94, 99-101, 106-108 and 113 are rejected under 35 U.S.C. 102(b) as being anticipated by Mottier (“Influence of tentative decisions provided by a Turbo-decoder on the carrier synchronization: Application to 64-QAM signals”, COST 254 Workshop on Emerging Techniques for Communication Terminals, Toulouse France July 7-9, 1997, pages 326-330).” (final office action, Part of Part of Paper No./Mail Date 20070831, p. 11-12).

The Applicant respectfully traverses.

The Applicant has amended certain of the claims.

The Applicant respectfully points out that, in order to support a proper rejection under 35 U.S.C. §102, a singular reference must teach and disclose each and every limitation of the subject matter as claimed by the Applicant. If the singular reference fails to teach and disclose each and every limitation of the subject matter as claimed by the Applicant, the rejections under 35 U.S.C. § 102 should be withdrawn.

The Applicant respectfully asserts that Mottier fails to teach and disclose each and every element of the subject matter as claimed by the Applicant in the independent claims within claims 62-67, 72-77, 82-86, 91-94, 99-101, 106-108 and 113.

The Applicant respectfully points out that Mottier performs partial turbo decoding on a received signal (i.e., within the “DEC1” of the “Module of Turbo-decoder” of FIG. 3 therein), and an output signal that is tapped off from the “DEC1” of the “Module of Turbo-decoder” is provided to a phase detector, a digital loop filter, and a digital integrator. The output of the integrator is passed to a mixer that mixes the incoming signal that is passed to the “Module of Turbo-decoder” of FIG. 3 of Mottier. In other words, a signal needs to pass firstly to the “Module of Turbo-decoder” of FIG. 3 of Mottier before any signal is generated and provided to the phase detector, the digital loop filter, the digital integrator, and the mixer.

The Applicant claims subject matter that include a synchronization module that is operable to recover a first symbol, a second symbol, and a third symbol from the signal; and a turbo decoder that is operable to decode the first symbol, the second symbol, and the third symbol that are provided from the synchronization module to make best estimates of information bits encoded therein.

The Applicant's claimed subject matter does not require this tapping off a signal from any portion of the "turbo decoder" to be fed back to the "synchronization module" (as can be seen in the Applicant's FIG. 3 and FIG. 4). Considering the Applicant's FIG. 3 and FIG. 4, the Applicant respectfully believes that the Applicant's claimed subject matter is distinct and different from Mottier. As such, the Applicant respectfully believes that Mottier fails to teach and disclose each and every limitation of the subject matter as claimed by the Applicant.

Moreover, in the U.S. provisional patent application serial no. 60/168,809, filed by the Applicant on 12-03-1999, to which the present U.S. utility patent application claims priority, the Applicant also teaches and discloses variations of the traceback depth that may be employed within the Applicant's claimed Viterbi decoder and/or Viterbi decoding.

The Applicant teaches and discloses:

"In order to avoid the large delay inherent in Viterbi decoding, a limited traceback depth can be used. (In fact, the traceback depth can be set to zero.)" (Applicant's U.S. provisional patent application serial no. 60/168,809, filed 12-03-1999, written description, p. 1, from 3<sup>rd</sup> paragraph).

The Applicant respectfully believes that one having skill in the art to which the invention pertains, when considering subject matter included within the Applicant's originally filed specification (including figures and written description) of the U.S. provisional patent application serial no. 60/168,809, filed 12-03-1999, would understand and comprehend that a "limited traceback depth can be used". In other words, a "traceback depth" that is less than a full "traceback depth" as typically employed within Viterbi decoding can be employed. Also, in one possible such embodiment, the "traceback depth" can be a "zero traceback depth" (e.g., "the traceback depth can be set to zero").

Moreover, the Applicant's originally filed specification (e.g., in the ABSTRACT) teaches and discloses:

“By replacing the slicer by a Viterbi decoder with zero traceback (i.e. one which does not consider future values of the signal only past values) a prediction as to what the incoming signal is can be made. Because the Viterbi decoder can consider past signal values it can predict the present symbol being received with higher reliability than by using a slicer, which considers only the present value of the incoming signal”  
 (Applicant’s written description, ABSTRACT).

The Applicant respectfully believes that Mottier fails to teach and disclose any such limitation of a “Viterbi decoder operating with a zero traceback depth”, “Viterbi decoding operating with a zero traceback depth”, a “Viterbi decoder operating with less than a full traceback depth” and/or “Viterbi decoding operating with less than a full traceback depth”.

In other words, the Applicant respectfully believes that Mottier fails to teach and disclose any such limitation of any limited (e.g., less than full) and/or zero “traceback depth” employed within a Viterbi decoder or Viterbi decoding.

As such, the Applicant respectfully asserts that Mottier fails to teach and disclose each and every element of the subject matter as claimed by the Applicant in these rejected claims.

In view of at least these comments made above, the Applicant respectfully believes that these independent claims rejected above are patentable over Mottier.

The Applicant respectfully believes that these dependent claims rejected above, being further limitations of the subject matter as claimed in allowable independent claims, respectively, are also allowable.

As such, the Applicant respectfully requests that the Examiner withdraw the rejections of these claims under 35 U.S.C. § 102(b) as being anticipated by Mottier.

#### ***Claim Rejections - 35 U.S.C. § 103***

4. In the final office action, the Examiner states:

“Claims 68, 70, 71, 78, 80, 81, 87, 89, 90, 95, 97, 98, 102, 104, 105, 109, 111, 112, 114 and 115 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mottier

as applied to claims 62, 72 and 82 above, and further in view of Applicant Admitted Prior Art (AAPA).” (final office action, Part of Part of Paper No./Mail Date 20070831, p. 25).

The Applicant respectfully traverses.

The Applicant has amended certain of the claims.

The Applicant’s comments made above are also applicable here.

The Applicant respectfully asserts that Mottier and the Examiner’s characterized “AAPA”, when considered individually or together, fails to teach and disclose the subject matter as claimed by the Applicant in these claims.

As such, the Applicant respectfully requests that the Examiner withdraw the rejection of these claims under 35 U.S.C. § 103(a) as being unpatentable over Mottier as applied to claims 62, 72 and 82 above, and further in view of Applicant Admitted Prior Art (AAPA).

The Applicant respectfully believes that claims 62-115 are in condition for allowance and respectfully requests that they be passed to allowance.

The Examiner is invited to contact the undersigned by telephone or facsimile if the Examiner believes that such a communication would advance the prosecution of the present U.S. utility patent application.

RESPECTFULLY SUBMITTED,

By: /SXShort/ Reg. No. 45,105  
Shayne X. Short, Ph.D., Reg. No. 45,105  
Direct Phone: (512) 825-1145  
Direct Fax No. (512) 394-9006

GARLICK HARRISON & MARKISON  
ATTORNEYS AT LAW  
P.O. BOX 160727  
AUSTIN, TEXAS 78716-0727

TELEPHONE (512) 825-1145 / FACSIMILE (512) 394-9006 or (512) 301-3707